

***Haplophyllum patavinum* in its relic habitats on the Euganean Hills (northeastern Italy), 300 years after its discovery (1722–2022)**

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Abstract

This short paper outlines the discovery and current knowledge of the Euganean populations of *Haplophyllum patavinum* (L.) G.Don, 300 years after this species was found on the Euganean Hills (NE Italy) by botanists Pier Antonio Micheli and Giovanni Girolamo Zannichelli.

Keywords

Colli Euganei, conservation, flora, Pier Antonio Micheli

In June 1722 Florence-born Pier Antonio Micheli, during a walking tour on the Euganean Hills with his Venetian friend Giovanni Girolamo Zannichelli, collected a species previously unknown to science, which was named *Pseudoruta patavina* (Micheli 1729; Zannichelli 1730). The time when Micheli and Zannichelli collected this plant can be inferred from a letter that Antonio Vallisneri (Professor at the University of Padua) wrote to Giuseppe Giorgi, a Florentine physician, dated 5th June 1722 and stored at the National Library of Florence, in the Magliabechi collection. In this letter, Vallisneri reported that Micheli and Zannichelli paid him a visit at home, on their way back from a walking tour which had started the previous day (4th June 1722) on the Euganean Hills, heading to Venice in order to collect algae from the lagoon (Targioni-Tozzetti 1858).

The following year (Tilli 1723), this species was already included in the catalogue of plants grown at the Botanic Garden of Pisa. In this catalogue, Tilli wrote that Micheli found this plant “*in agris et locis sterilioribus prope Arquatum, in Agro Patavino, cum Domino Zannichellio detecta fuit*” [discovered with Mister Zannichelli among the tilled and barren lands near Arquà, in the District of Padua]. Later, Micheli (1729) characterized the new species with a short description, along with a beautiful iconography, and specifying the place of collection, namely Sassonegro di Arquà, where this species still grows today. In the library of the Botanical Garden of Padua, there is also a watercolor painting of the species, contained in a volume *in folio* by G.G. Zannichelli that collects the preparatory coloured drawings for his works: it is the first color drawing of this species (Tietto and Chiesura Lorenzoni 2000b).

Linnaeus' (1753) species *Ruta patavina* is based on Micheli's works and his *Pseudo-Ruta* iconography (Fig. 1) was designated by Townsend (1986) as lectotype of the name (Peruzzi et al. 2019). Subsequently de Jussieu (1825) split the genus *Ruta* into *Ruta* and *Aplophyllum* [later corrected by Spach (1849) as *Haplophyllum*]. Eventually, *R. patavina* was attributed to *Haplophyllum* by Don (1831).

Later, this species was found and reported by numerous botanists who visited the Euganean Hills (Béguinot 1911), since this is the only area in Italy where the plant grows spontaneously.

Haplophyllum patavinum (L.) G.Don is an Illyrian species (Dolcher 1956–1957; Townsend 1986; Pignatti et al. 2017), occurring in Italy only in very small areas in the calcareous sectors around Arquà Petrarca near Padua, then in the mountains of Slovenian Karst, Croatia, Bosnia-Herzegovina, Montenegro, north-eastern Albania, Greece, and south-western Romania.

Accordingly, the Euganean Hills mark the westernmost limit of this species range (Cappelletti 1956–1957; Dolcher 1956–1957). These Italian populations are seen as the remains of a wider and continuous past distribution, which became fragmented due to the alternate climate changes in the post-glacial periods.

Haplophyllum patavinum is a pioneer species in the Euganean Hills. It settles on loose, superficial, dry and sunny land, where it grows in small scattered but dense groups on calcareous scree, free from the turf (Fig. 2). Its current habitat is made up of recently abandoned vineyards and orchards, low-density olive groves, tilled land allowed to rest, holes dug for reforestation and agricultural works, small recent landslides, road and path edges and superficially tilled land. These open environments have become increasingly rare on the Euganean Hills, so that the populations of *H. patavinum* are slowly becoming less dense. Once the vegetation canopy closes, these plants become at first small, weak and devoid of flowers, then within a few years the population disappears. One of the most interesting peculiarities of this species, whose persistence is notably jeopardised by the difficulty to reproduce sexually as well as the major modifications of its habitat, is its capacity to move from areas where its survival has already been compromised to more suitable areas, located at a relatively short distance.

Comparing recent observations with the data published about 20 years ago (Tietto and Chiesura Lorenzoni 2000a; Tietto et al. 2001; Masin and Tietto 2005; Rossi di

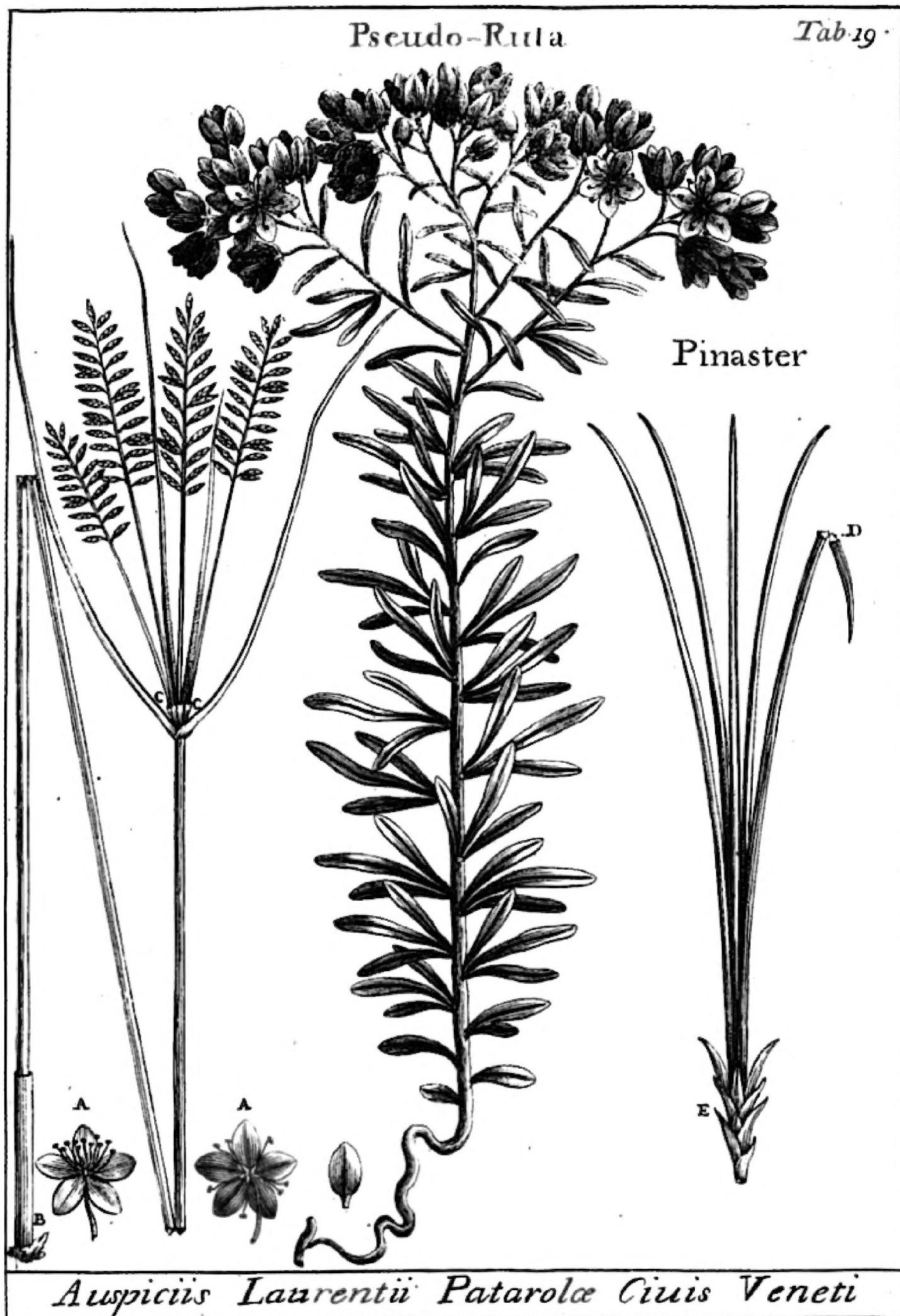


Figure 1. Iconography published in *Nova Plantarum Genera* (Micheli 1729) and designated as lectotype of *Ruta patavina*.



Figure 2. *Haplophyllum patavinum* (L.) G.Don in the Euganean Hills (Padua).

Schio et al. 2005), reveals that the populations of this species seem significantly depleted. A careful monitoring study carried out during the last three years (2019–2021) detected only nine localities (Fig. 3) out of the ca. 30 previously documented (Fig. 4). In all these localities small groups of plants can be found, due to vegetation closure and to invasive breaking up of the calcareous land to obtain space for new vineyards. Given the peculiar needs of this species, a continuous, weak and superficial disturbance should be carried out, to guarantee its survival. This species is listed as Vulnerable (VU [B1ab (iii) + 2ab (iii)]) in the Red List of threatened vascular plants in Italy (Orsenigo et al. 2020). Considering the new data provided here, *H. patavinum* could qualify for a higher risk category.

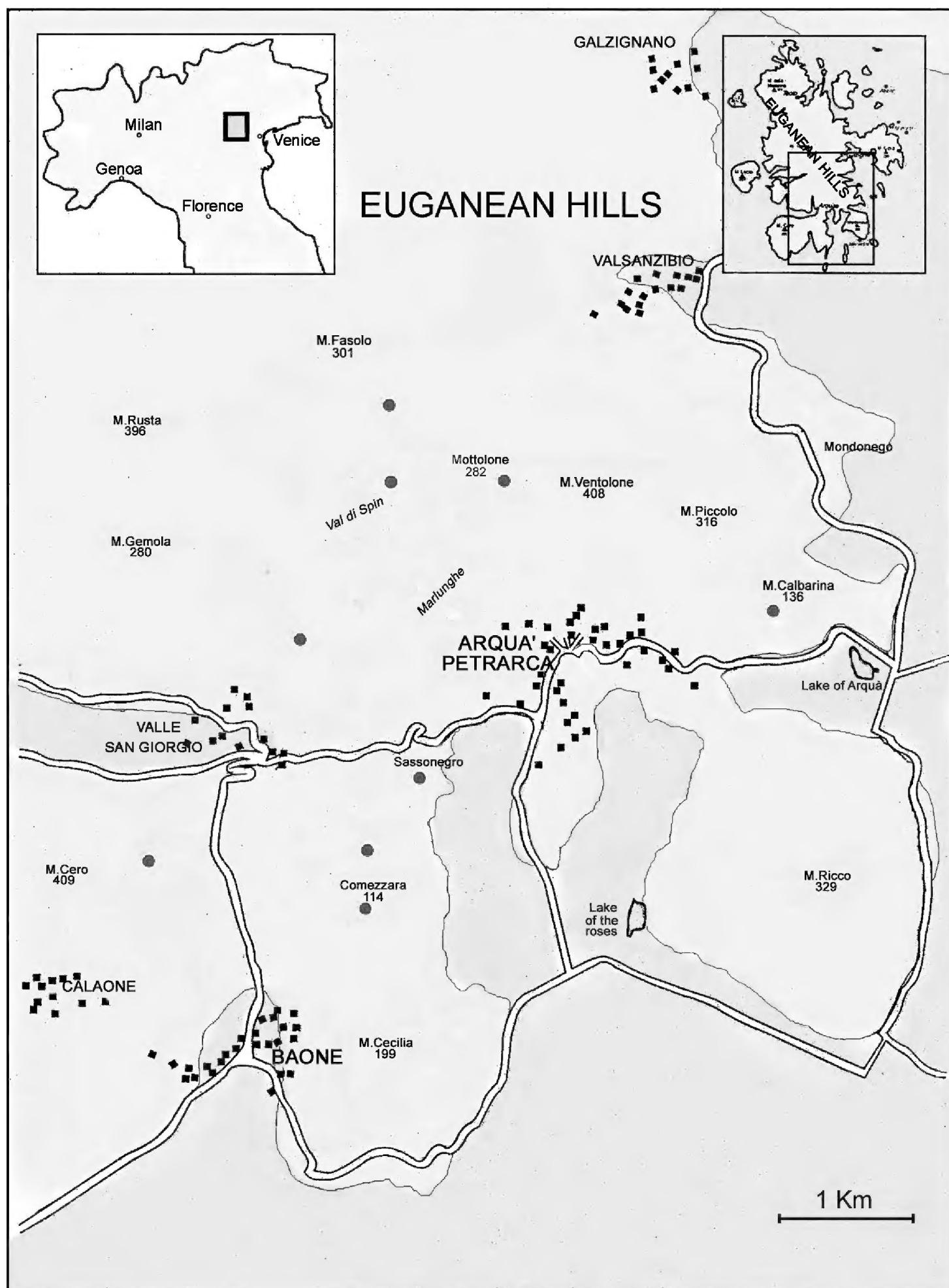


Figure 3. Distribution (blue dots) of *Haplophyllum patavinum* (L.) G.Don in the Euganean Hills (Padua) as resulting from the surveys carried out in the years 2019–2021.

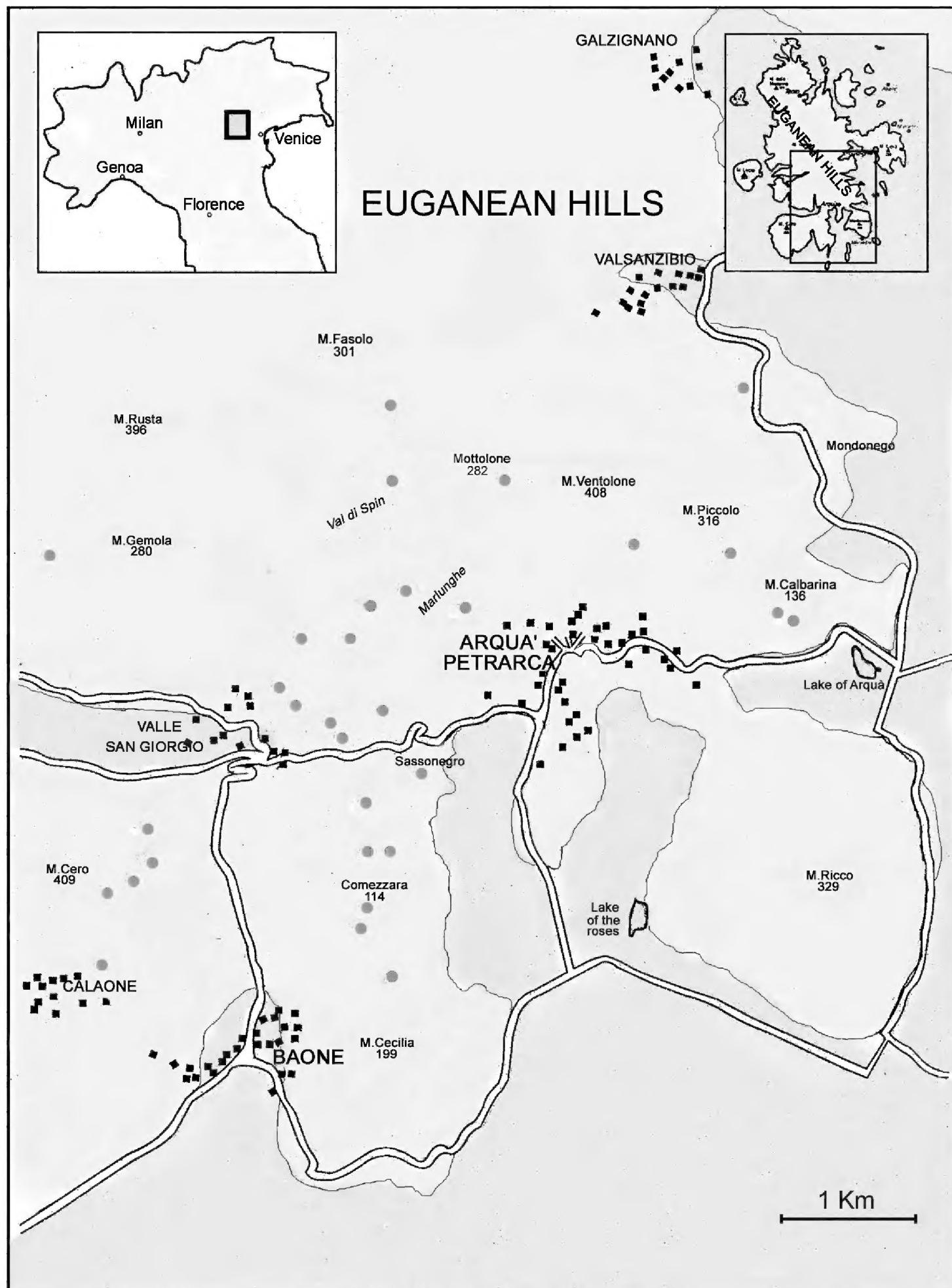


Figure 4. Distribution (red dots) of *Haplophyllum patavinum* (L.) G.Don in the Euganean Hills (Padua) as resulting from the surveys carried out in the years 1999–2005.

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